CALIFORNIA ENERGY COMMISSION
1516 NINTH STREET
SACRAMENTO, CA 95814-5512

May 21, 2007

Mr. Harry A. Krug
Air Pollution Control Officer
Colusa County Air Pollution Control District
100 Sunrise Boulevard, Suite A-3
Colusa, CA 95932-3246

Re: Comments on Preliminary Determination of Compliance (PDOC)
Colusa Generating Station (06-AFC-9)

Dear Mr. Krug,

The California Energy Commission staff commends the District on its timely and comprehensive PDOC for the Colusa Generating Station (CGS) project. Staff has reviewed the PDOC and has the following comments for your consideration for inclusion in the Final Determination of Compliance (FDOC).

Gas Combustion Turbine Generators and Heat Recovery Steam Generators: Volatile Organic Compound Emissions Basis – Non-Duct Firing Operations

After careful review of the applicant's emission calculations, it appears that the volatile organic compound (VOC) emissions basis for duct firing and non-duct firing operations are different. The combined VOC emissions for the gas combustion turbine generators (CTGs) and the heat recovery steam generators (HRSGs) are based on an approximate 1.3 parts per million (ppm) rather than 2.0 ppm for non-duct firing operation. The emission differential between 1.3 ppm and 2.0 ppm for 4,446 hours of non-duct firing full load operation amounts to approximately 8.1 tons per year of VOC emissions. To confirm the annual emission limits and offset requirements we suggest revising PDOC Condition 11 as follows (shown as underlined language):

11) The CTGs will meet a VOC limit of 2.0 ppmvd @ 15% O_2 with <u>duct burner firing</u> and <u>1.3 ppmvd @ 15% O_2</u> without duct burner firing. Maximum hourly steady state emission limits for each CTG are:

Pounds VOC with Duct Firing	Pounds VOC without Duct Firing
7.2	3.4

Staff considers this an important issue and will be making this recommendation in the Energy Commission's Preliminary Staff Assessment.

Facility Quarterly Emission Totals

The total facility quarterly emission totals shown in PDOC Condition 23 are greater than the sum of the five emission sources (two turbine/HRSGs, auxiliary boiler, two emergency engines). They seem to reflect older emission estimates for the ancillary equipment (auxiliary boiler and two emergency engines) that were later revised to reflect Best Available Control Technology (BACT) and the current internal combustion engine emission standards. Staff requests that PDOC Condition 23 and Condition 24 be updated to properly reflect the current quarterly emission totals, as reflected in the table below.

AIR QUALITY Table 21
CGS Total Criteria Pollutant Quarterly and Annual Emissions

Period	Units	NOx	CO	VOC	SOx	PM10
1st Quarter	(ton/qtr)	45.60	54.20	12.36	4.05	35.29
2nd Quarter	(ton/qtr)	43.62	52.40	11.69	3.83	35.39
3rd Quarter	(ton/qtr)	51.34	107.06	11.90	3.87	35.70
4th Quarter	(ton/qtr)	44.31	53.86	11.82	3.87	35.69
Annual	(ton/yr)	184.87	267.52	47.77	15.62	142.07 ?

Natural Gas Fuel Sulfur/Sulfur Oxide (SOx) Emissions

The CTGs/HRSGs SOx emissions calculated by the applicant are too high considering the provided gas turbine and duct burner heat input rates and the long and short-term fuel sulfur content values of 0.3 and 1.0 grains per 100 scf, respectively. A sample calculation is as follows for the low temperature duct burning case:

2515.5 MMBtu/hr / 1000 Btu/scf = 2.5155 MMscf/hr
2.5115 MMscf/hr x 1.0 grain S/ 100 scf = 25,155 grain S
25,155 grain S x 2 (MW SOx/MW S) / 7000 grain/lb = 7.19 lbs/hr

The applicant's emission estimates, which were used in the PDOC, provided a value of 8.0 lbs/hour for this same case which would correspond to a fuel sulfur content of 1.113. It appears that the error may be an incorrect use of the heat conversion from lower to higher heat rate, when the gas turbine and duct burner heat input values were already in higher heat value. All of the SOx emission estimates for the CTGs/HRSGs are incorrect by this same amount. Staff's calculated quarterly SOx emissions, based on long-term average fuel sulfur content of 0.3 grains/100 scf for the CTGs/HRSGs are as follows:

Q1 – 8,104 lbs Q2 – 7,663 lbs
Q3 – 7,736 lbs Q4 – 7,731 lbs

Staff can provide the District with additional SOx emission calculations to show the addition of all operating scenarios for each quarter, if necessary.

Gas Turbine/HRSG NOx BACT Averaging Period

Staff believes that the BACT NOx ppm standard for the CTGs/HRSGs should be based on a one-hour averaging period. While many older facilities have a three-hour averaging requirement, we believe that a 1-hour average is a current BACT basis for California. Staff's review of recent siting case decisions for combined cycle projects indicates a predominate use of a one-hour averaging limit for NOx BACT. Examples of projects with a 2.0 ppm limit and one-hour averaging period include: the NRG El Segundo Power Redevelopment Project, Turlock Irrigation District's Walnut Energy Center, the Silicon Valley Power Pico Power Project (now called Von Raesfeld Power Plant), Sacramento Municipal Utility District's Cosumnes Power Plant Project, and the Duke Energy/ LS Power Morro Bay Power Plant Project. Staff believes that considering these projects with a one-hour averaging requirement is now well established across the state as BACT and that allowing more than a one-hour averaging period would be inappropriate.

California Air Resources Board Comments

Air Resources Board (ARB) staff has reviewed the PDOC and requested that the Energy Commission staff add the following points in this comment letter. The ARB comments, with additional clarifying information added in parenthesis, are as follows:

1. The PDOC states a NOx averaging time of three hours. The BACT level for NOx should be 2.0 ppmvd @15% O_2 averaged over one hour (Condition 12, Energy Commission staff commented above on this issue).
2. The auxiliary boiler calculations were based on a limit of 3744 hours per year. Therefore, the FDOC should be conditioned to reflect this limit (new condition or add requirement to Condition 21).
3. The FDOC should reflect that BACT for VOC is 2.0 ppmvd @ 15% O_2 averaged over one hour (Condition 11).
4. The FDOC should include a condition to annually source test for NH_3 (revise or clarify Condition 7).
5. The FDOC should include a condition to establish how the parametric monitoring for NH_3 will be established (new condition).
6. The FDOC should call out for a source test protocol to be submitted to the District at least 45 days prior to conducting the annual source tests. The condition should state that the protocol must be approved by the Air Pollution Control Officer at least 10 days prior to actual source testing (new condition or amend Condition 7).
7. The FDOC should include a condition for the placement of the source test ports as specified by 40 CFR part 60, Appendix A, Method 1 (new condition or amend Condition 7).
8. The FDOC should include a condition requiring that relative accuracy test audits (RATA) tests be conducted at least once per year to verify the performance of the CEM system (new condition or amend Condition 16).
9. The FDOC should specify the specific source test methods to be used per pollutant (amend Condition 7)

10. The FDOC should include a condition requiring that the applicant provide notification to the District of when the source testing will occur (amend Condition 7).
11. The first sentence in Condition number 24 in the PDOC should reference the following "amounts" not "numbers."
12. The PDOC in several conditions states that the CTGs "will" meet ...." ARB staff suggests that the District state that the CTGs "shall" meet the specified limits.
13. While it is understood that USEPA has not delegated New Source Performance Standards (NSPS) authority to the District, it is recommended that the FDOC include all applicable standards and test procedures for meeting the requirements of the Subpart KKKK--Standards of Performance for Stationary Combustion turbines (provide discussion of Subpart KKKK in Compliance Analyses section of FDOC and add conditions necessary for compliance assurance).
14. An uncontrolled auxiliary boiler of this size would emit NOx at a concentration of 30 ppm, which would trigger BACT (25 lbs/day). BACT for NOx for a boiler this size is 9 ppmvd@ 3% O_2 based upon information available at the San Joaquin Valley Air Pollution Control District BACT clearinghouse at http://www.valleyair.org/busind/pto/bact/chapter1.pdf
(The auxiliary boiler BACT discussion and Conditions 14, 21, 23, and 24 should be revised, as necessary).

If you have any questions, please contact Keith Golden of my staff at (916) 653-1643. Thank you for the opportunity to comment on the Colusa Generating Station project Preliminary Determination of Compliance.

Sincerely,

PAUL RICHINS
Environmental Protection Office Manager

cc: Docket